

Title (en)  
BATTERY APPARATUS AND CELL BALANCING CIRCUITS

Title (de)  
BATTERIEVORRICHTUNG ZELLENAUSGLEICHSSCHALTUNGEN

Title (fr)  
APPAREIL DE BATTERIE ET CIRCUITS D'ÉQUILIBRAGE D'ÉLÉMENT

Publication  
**EP 3420623 A4 20190313 (EN)**

Application  
**EP 16890968 A 20160223**

Priority  
CN 2016074332 W 20160223

Abstract (en)  
[origin: US2017244258A1] Disclosed examples include battery apparatus and balancing circuits for transferring charge between one or more of a plurality of battery cells and a second battery, in which a battery is coupled with a first winding of a transformer, and the second battery is coupled with a second transformer winding. A first transistor is turned on to allow current flow in the first winding to discharge the first battery, and then the first transistor is turned off. The resulting induced voltage in the second winding turns on a second transistor to provide flyback active charge balancing to charge the second battery. A signal from the third winding allows detection of low or zero current flow in the second winding for a controller to begin subsequent charge transfer cycles for full isolation between the first and second batteries.

IPC 8 full level  
**H02J 7/00** (2006.01)

CPC (source: EP US)  
**H02J 7/0019** (2013.01 - EP US); **H02J 7/00711** (2020.01 - US); **H02J 7/342** (2020.01 - EP US); **Y02T 10/70** (2013.01 - EP US)

Citation (search report)

- [A] US 2015214766 A1 20150730 - SHI DAMING [CN]
- [A] CN 104659877 A 20150527 - HANGZHOU GAOTE ELECTRONIC EQUIPMENT CO LTD & US 2018019601 A1 20180118 - WANG HAO [CN], et al
- [A] CN 102593916 A 20120718 - DELONG FLEXTRONICS, et al
- See references of WO 2017143514A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**US 10218190 B2 20190226; US 2017244258 A1 20170824**; CN 110249498 A 20190917; CN 110249498 B 20230616; EP 3420623 A1 20190102; EP 3420623 A4 20190313; EP 3420623 B1 20211229; JP 2019508002 A 20190322; JP 6691729 B2 20200513; US 10615612 B2 20200407; US 2019148953 A1 20190516; WO 2017143514 A1 20170831

DOCDB simple family (application)  
**US 201615190252 A 20160623**; CN 2016074332 W 20160223; CN 201680082058 A 20160223; EP 16890968 A 20160223; JP 2018544511 A 20160223; US 201916249625 A 20190116